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AUTHOR Skinner, Nicole
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ABSTRACT

In 1988 the Oregon Precision Metal Fabricators Association (OPMFA) asked Clackamas Community College (CCC) to develop and conduct a training program specifically for the precision sheet metal industry. The aim of the partnership was to train new workers and to upgrade skills of current employees. OPMFA equipped the Advanced Technology Center (ATC); CCC provided curriculum development and recruitment. The ATC implemented two 9-month certificate programs in precision sheet metal technology and screw machine technology and an ongoing 6-week program designed to give students entry-level skills applicable to either industry and to the metal manufacturing industry at large. Recruiting efforts and a placement program were undertaken. CCC began a partnership with four other local community colleges to form the Oregon Advanced Technology Consortium (OATC), the mission of which would be to improve the competitiveness of Oregon industry through technology transfer and technical training. The OATC proposed to accomplish this in three ways: through information collection and dissemination; through advanced technical training; and through applied research. Activities in each area were undertaken. Long-term goals of the ATC and the OATC were development of 2+2 programs with area high schools, development of an apprenticeship program, and development of an associate degree in precision metal manufacturing. (YLB)

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FORMING THE FUTURE WITH A UNIQUE PARTNERSHIP

Nicole Skinner, Project Coordinator
Oregon Advanced Technology Center-Clackamas Community College
9720 SW Hillman Court, Suite 830
Wilsonville, OR 97070
503.657.6958 ext.668

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In 1988 the Oregon Precision Metal Fabricators Association asked Clackamas Community College to develop and conduct a training program specifically for the precision sheet metal industry.[1] Precision sheet metal components consist mostly of enclosures for the computer, hospital and electronics equipment industries, as opposed to the traditional sheet metal industry, which fabricates heating, ventilation and air conditioning equipment. The precision sheet metal industry currently faces a labor shortage: much of its skilled workforce is nearing retirement and there is a dearth of skilled technicians to fill those positions. At the same time the companies in this industry are upgrading their technology; computer numerical control equipment has replaced much of the mechanical equipment on the shop floors, and employees must have the skills needed to operate and maintain the equipment. Thus the aim of the partnership between the OPMFA and CCC is twofold: to train new workers for the industry and to upgrade the skills of current employees. The Northwest Screw Machine Products Association is also facing the same labor shortages and has partnered with CCC to conduct training for their industry.

In April 1989 the Clackamas Community College Board of Education approved a five year lease of 6,800 square feet of instructional space for a training center in Wilsonville, approximately 18 miles south of the main campus, where the training programs would be conducted. Shortly afterwards skill upgrade classes at the Center began. The OPMFA agreed to equip the training center while CCC agreed to provide curriculum development, recruitment and the training center itself. To date the OPMFA has stocked the shop

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[1]The OPMFA represents 55 businesses in the Portland Metro area and the Willamette Valley with 50 job openings annually.

training space with approximately $500,000 worth of state of the art metal manufacturing equipment. The equipment has either been loaned, donated or leased to the Center through the OPMFA from suppliers, vendors and manufacturers.

In July 1989 CCC applied for a U.S. Department of Education Cooperative Demonstration Program grant in Precision Manufacturing Technology[2]. The grant objectives were to develop curricula, provide work readiness training, design training for instructors, establish a model for replication,[3] develop a recruitment package, pilot test the classes, fill job vacancies and evaluate the project. Women and minorities were targeted for recruitment as they are projected to comprise 80% of new entrants into the workforce in the 1990s. Clackamas Community College received the grant of $366,000, which has funded the development of the training programs for the OPMFA and the NWSMPA. Currently the Center runs two nine month certificate programs in precision sheet metal technology and screw machine technology and an on-going six week program designed to give students entry level skills applicable to either industry and to the metal manufacturing industry at large.

The activities for the federal grant began in January of 1990 when key staff members were hired to work on curriculum development. In consultation with representatives from the two industries, staff members developed curricula for both the nine month program and the six week program. Industry trainers were identified, hired and completed a "Train the Trainer" course to help them transfer their shop knowledge to the classroom setting.

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[2]Portions of this paper were excerpted from this grant proposal.

[3]A replication model will be available for dissemination during the summer of 1991.

In May of 1990, Introduction to Precision Manufacturing Technology, the six week entry level program, began. To date we have held five of these sessions and have placed approximately 80% of the graduates within the two industries. (Each six week session contains approximately 12 students.) At the same time the ATC began developing, again with the consultation of industry members, two recruiting videotapes and a recruitment package aimed at high school students, displaced workers, women and minorities. Recruiting efforts dominated most of the ATC staff activities during the summer of 1990, and in September 1990 we began the first nine month classes. (See Appendix A for a detailed list of classes offered.) Staff members also spent the summer of 1990 developing a placement program for the graduates.

At the same time that CCC applied for the federal grant it partnered with four other local community colleges--Chemeketa Community College, Linn-Benton Community College, Mt. Hood Community College and Portland Community College--to form the Oregon Advanced Technology Consortium. The Consortium then proceeded to apply for an Oregon Economic Development Department grant to fund a network of statewide advanced technology centers, beginning with CCC's advanced technology center in Wilsonville. The aims of this grant were to create a demonstration model for technology transfer in precision metal manufacturing, develop an advanced technology center that would serve as a planning model for future ATCs across the state, and contribute to the development of a permanent training and research center at CCC's South Campus in Wilsonville. The Oregon Advanced Technology Consortium's mission is to improve the competitiveness of Oregon industry through technology transfer and technical training. The

goal of technology transfer is to reduce the time lag between technological innovation and application on the manufacturing shop floor. The OATC proposed to accomplish this in three ways: through information collection and dissemination, through advanced technical training, and through applied research. To these ends the OATC houses a small library and offers DIALOG database search services to local manufacturers. The training programs offered at the center fulfill the advanced technical training component. The OATC is currently conducting a research project to determine the applications of laser cutting technology on the manufacturing shop floor. This is done mostly through part prototyping for local businesses and collecting data regarding all aspects of production, analyzing the data and making recommendations.

Some of the long-term goals of the Center and the Consortium are to develop 2+2 programs with area high schools, develop an apprenticeship program, and develop an A.A. degree in precision metal manufacturing. Maintaining the alliance between the partners in this effort is the key to developing and conducting successful programs. Support from the manufacturing industry has helped us gain statewide attention, particularly from elected officials. That a traditionally diametrical group of people--manufacturers and business leaders, competing community colleges, and educational administrators and teachers--could form such an alliance is nothing short of staggering, especially considering the relatively brief time in which so many of the goals were realized. We feel that such partnerships among diverse interests will pave the way for improvements in the educational system, and ultimately for the workforce and the national economy. Indeed, one of our priorities is to set an example for others across the nation who wish to develop similar parterships.

APPENDIX A

CLASSES OFFERED AT THE ATC FROM 1989-1991:

Blueprint Reading

Geometric Tolerancing & Dimensioning

Applied Beginning Algebra

Advanced Technical Math

Flat Pattern Development

Introduction to CNC Press Brake

CNC Press Brake & Turret Punch

Introduction to Screw Machine Technology

Screw Machine Feeds & Speeds

Basic Tool & Cam Design

Introduction to CNC Laser Cutting

CNC Laser Applications I

CNC Laser Applications II

Mastercam I

Mastercam II

Cadkey I

Cadkey II

Cadkey III

Introduction to Precision Manufacturing Technology (six week program)

Precision Metal Fabrication (nine month program)

Screw Machine Technology (nine month program)